

**WHAT IS CLAIMED IS:**

1       1. An opto-electronic video compression system, comprising:  
2           a lens element for transmitting light of an image and having one or more lenses,  
3   each lens having a predetermined focal length;  
4           a sensor array including a first sensor for receiving focused light from the lens  
5   element and a second sensor for receiving defocused light from the lens element, wherein the  
6   first sensor includes  $X \times Y$  pixels and samples the focused light at each of the  $X \times Y$  pixels, and  
7   the second sensor includes  $X/2 \times Y/2$  pixels and samples the defocused light at each of the  $X/2 \times$   
8    $Y/2$  pixels; and

9           an electronic differencing element in communication with the first and second  
10   sensor for differencing the coefficients of co-located pixels.

11       2. The opto-electronic video compression system of Claim 1, wherein the lens  
12   element includes a single lens, and further including a beam splitter between the lens element  
13   and the sensor array for transmitting a first percentage of the light from the image to the first  
14   sensor and a second percentage of the light from the image to the second sensor.

15       3. The opto-electronic video compression system of Claim 1, wherein the lens  
16   element includes a single collimated lens, further including a beam splitter between the lens  
17   element and the sensor array for transmitting a first percentage of the light from the image to the  
18   first sensor and a second percentage of the light from the image to the second sensor, and further  
19   including a first lens between the beam splitter and the first sensor for providing the focused light  
20   on the first sensor, and a second lens between the beam splitter and the second sensor for  
21   providing the defocused light on the second sensor.

22       4. The opto-electronic video compression system of Claim 1, wherein the sensor  
23   array is a stepped array.

24       5. The opto-electronic video compression system of Claim 1, further including an  
25   electronic quantizing element in communication with the electronic differencing element for

3 dividing coefficients received from the electronic differencing element by a predetermined  
4 quantizer coefficient.

1       6. The opto-electronic video compression system of Claim 1, wherein the lens  
2 element includes multiple lenses.

1       7. The opto-electronic video compression system of Claim 6, wherein each lens has  
2 the same focal length and the sensor is a stepped sensor.

1       8. The opto-electronic video compression system of Claim 6, wherein each lens has  
2 different focal lengths and the sensor is a planer sensor.

1       9. The opto-electronic video compression system of Claim 1, further including an  
2 electronic quantizing element in communication with the electronic differencing element for  
3 dividing coefficients received from the electronic differencing element by a predetermined  
4 quantizer coefficient.

1       10. The opto-electronic video compression system of Claim 9, wherein the quantizer  
2 coefficient is programmable.

1       11. The opto-electronic video compression system of Claim 9, wherein the electronic  
2 quantizing element is a programmable attenuation circuit.

1       12. The opto-electronic video compression system of Claim 9, further including a  
2 model in communication with the electronic quantizing element and a second electronic  
3 differencing element in communication with the electronic quantizing element and the model for  
4 calculating the difference between a coefficient and a co-located coefficient from the model.